

Title: CONTROL OF COOLANT FLOW  
 RATE FOR VEHICLE HEATING  
 Inventor(s): Ronald S. EISENHOOR  
 DOCKET NO.: 032915-0150

Engine RPM	1122	1459	1836	2370		2913	3426	3913	4482
Blower Voltage	13.4	13.4	13.4	13.4		13.4	13.3	13.3	13.2
Tc1l	81.2	82.0	82.3	83.1		83.1	82.6	82.4	81.2
Two	67.4	71.2	73.4	75.6		76.8	77.5	77.9	77.4
Evap. Air In Temp	-8.0	-5.9	-7.8	-9.6		-10.9	-10.5	-9.9	-8.4
Evap. Air Out Temp	-7.5	-5.4	-7.1	-9.0		-10.3	-9.8	-9.4	-7.9
Ambient Temp	-17.8	-16.5	-18.1	-18.2		-19.0	-19.0	-18.1	-17.6
FOOT outlet left	60.2	65.8	68.4	70.4		71.4	72.2	72.7	72.4
FOOT outlet right	58.4	63.4	65.8	67.7		68.6	69.4	69.9	69.6
Cc/Ch	0.206094	0.152766	0.119559	0.0946	HCD 0.026	0.078001	0.063267	0.055224	0.047658
UA/Cc	1.981384	2.240239	2.375651	2.4126	UA'Cc 2.73	2.437504	2.469697	2.487412	2.510086
Outlet Temp. Est	59.6	64.1	66.7	69.0		70.2	71.1	71.6	71.3
Deviation	0.4	0.5	0.5	0.1		0.2	0.3	0.3	0.3

Fig. 1

Total Cabin Air Volume Flow Rate Table

Blower Voltage	Mix Percentage					
	0%	20%	40%	60%	80%	100%
4	3.2	3.0	2.7	2.3	2.0	1.7
6	5.0	4.8	4.3	3.7	3.1	2.7
8	6.4	6.1	5.4	4.6	4.0	3.4
10	7.5	7.1	6.3	5.5	4.7	4.0
12	8.5	8.1	7.2	6.2	5.3	4.5
14	9.3	8.9	7.9	6.8	5.8	5.0

Fig. 2

Volume Flow Rate Through Heater Core

Blower Voltage	Mix Percentage					
	0%	20%	40%	60%	80%	100%
4	0.0	0.6	1.1	1.4	1.6	1.7
6	0.0	1.0	1.7	2.2	2.5	2.7
8	0.0	1.2	2.2	2.8	3.2	3.4
10	0.0	1.4	2.5	3.3	3.7	4.0
12	0.0	1.6	2.9	3.7	4.2	4.5
14	0.0	1.8	3.2	4.1	4.6	5.0

Fig. 3

**% of Reference Airflow Passing Through Core**

Blower Voltage	Mix Percentage					
	0%	20%	40%	60%	80%	100%
4	0%	12%	22%	28%	32%	35%
6	0%	20%	35%	45%	51%	55%
8	0%	25%	44%	57%	65%	70%
10	0%	29%	52%	67%	76%	82%
12	0%	33%	58%	75%	86%	93%
14	0%	36%	64%	83%	95%	102%

Fig. 4

**Heater Core Air Out Temp. Performance (85°C HWI)**

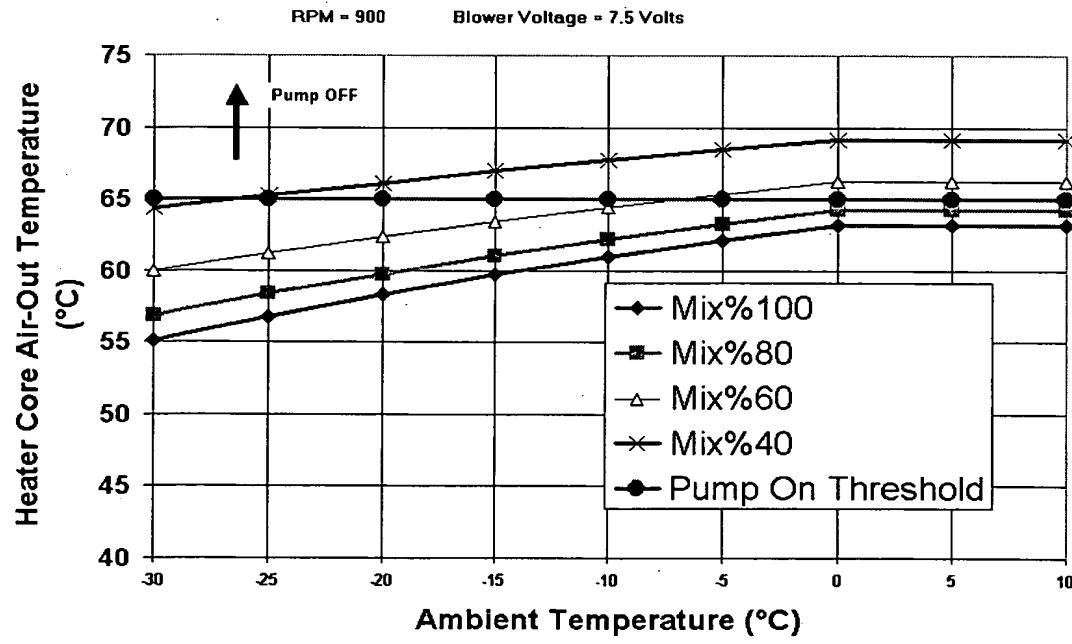


Fig. 5

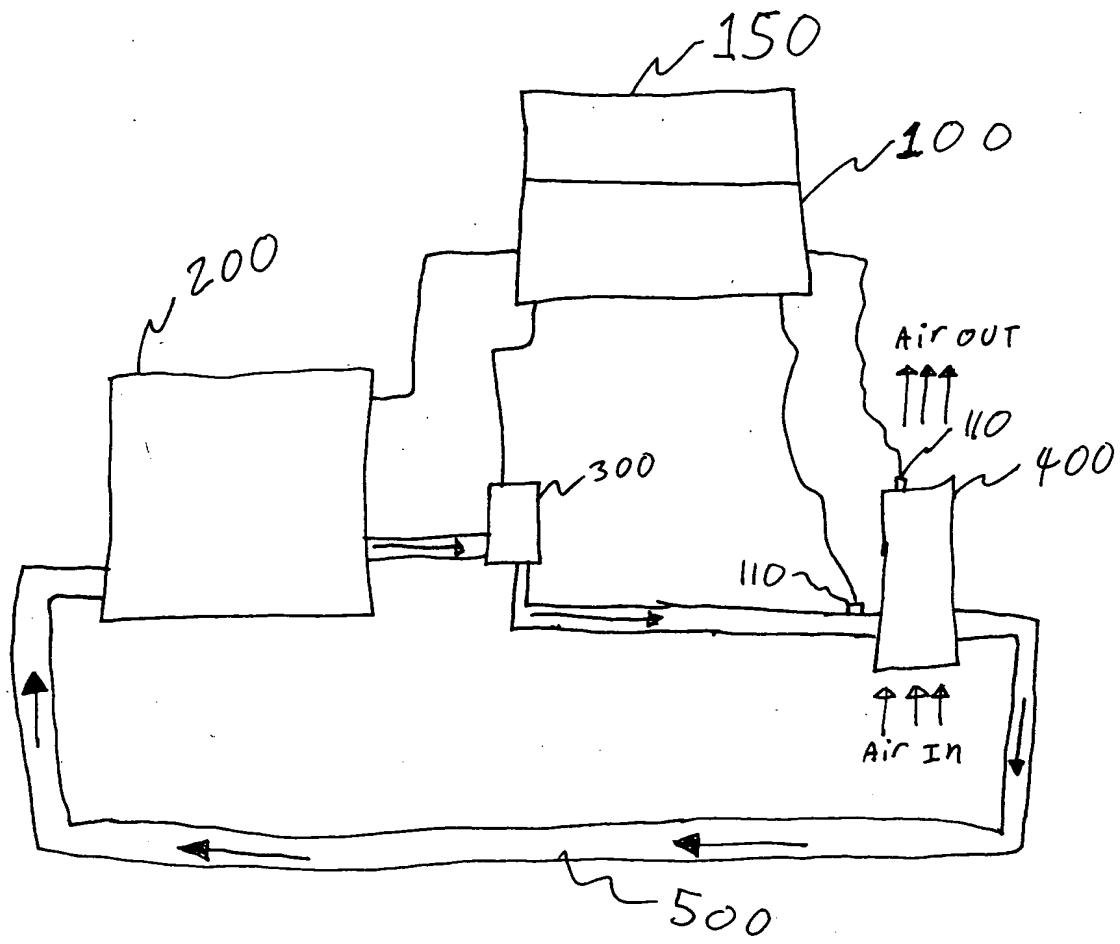


Fig. 6

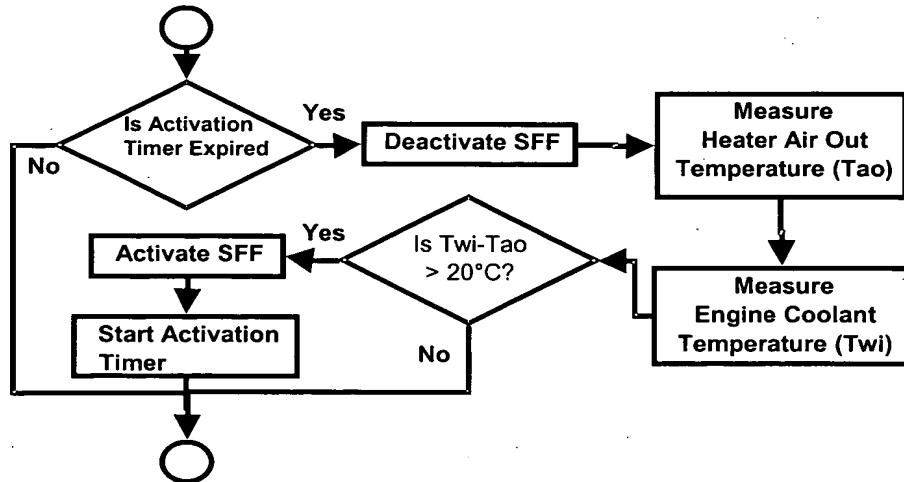


Fig. 7

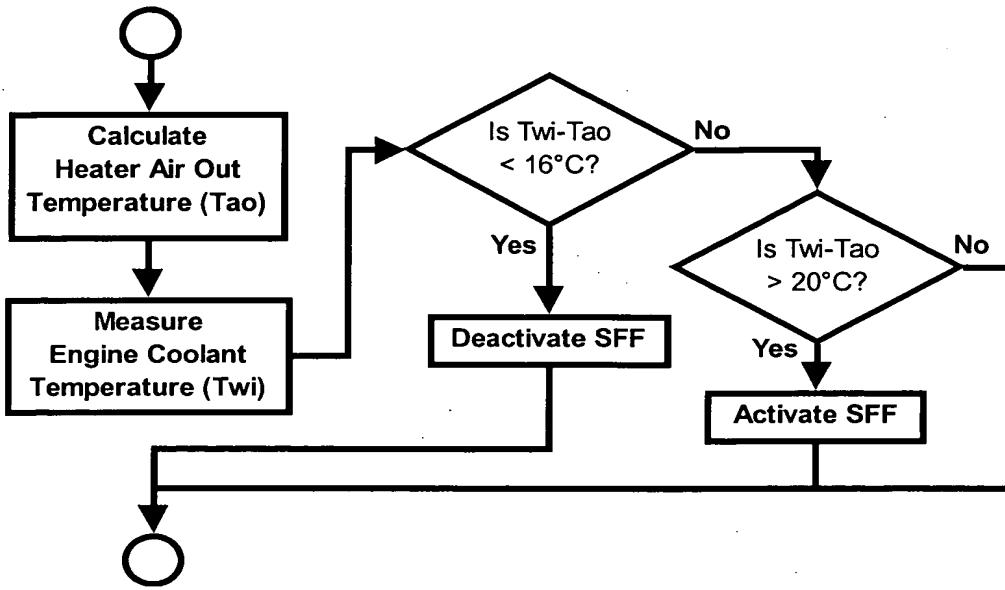


Fig. 8